

Title: REGIONAL MODEL FOR SOUTH FLORIDA COASTAL SEAS.

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Project Summary: In response to specific recommendations of the Florida Bay and Florida Keys Feasibility Study (FBFKFS) peer review panel on the hydrodynamic modeling of Florida Bay as well as the Physical Science Team (PST) of the Florida Bay and Adjacent Marine Systems Science Program, we are prepared to develop the three-dimensional “community” hydrodynamic model of the coastal seas adjacent to Florida Bay and the Florida Keys required to provide boundary conditions for coastal limited area models and support alternative evaluation simulations ([SoFLA-HYCOM](#)). The peer review panel and the PST recognized that Florida Bay models need to include the influence of large scale flows through their boundaries with both the Gulf of Mexico and the Florida Straits. Furthermore, the proximity of Florida Bay to the Florida Keys National Marine Sanctuary (FKNMS) and its Dry Tortugas Ecological Reserve requires careful evaluation of the impact that the Everglades Restoration plan activities may have on these environmentally sensitive areas. Potential man-made disturbance of the fragile coral reef ecosystem must be addressed, in the context of natural disturbances associated with large scale flows, climatic variability and connectivity to remote reef systems. Last, addressing the physical questions posed by state and federal (e.g., NOAA/NMFS) fisheries biologists concerned with recruitment pathways within the South Florida coastal ecosystem requires a regional model. Together these challenging tasks can only be addressed if coastal models of Florida Bay and the Florida Keys are linked together and with the adjacent seas through suitable boundary conditions provided by a regional model surrounding Florida Bay. We are in a position to develop this regional model because we can draw upon and coordinate

with the following ongoing activities of our group:

- a) We are performing a feasibility study on the coupling of coral reef models to a regional model on a limited domain around the Florida Keys, with support from an EPA-funded project that focuses on ecological and management issues in the FKNMS and its reef tract;
- b) We are already using state-of-the-art community model HYCOM (Hybrid Coordinate Ocean Model) that includes coupling with an existing larger scale application of HYCOM for the North Atlantic and Gulf of Mexico (see <http://oceanmodeling.rsmas.miami.edu/hycom/>). The community model has the support of a large modeling group (HYCOM Consortium for Data Assimilative Modeling) that is coordinated by the University of Miami and is committed to global simulations and numerical code updating;
- c) We are already conducting the observational studies required for regional (and interior Bay) model simulations under the auspices of the NOAA South Florida Program.

Relevance to
Restoration and/or
Resource
Management:

The proposed study will develop a reliable modeling tool that connects the different South Florida subregions. This development tool will be directly linked to the effort to predict the impacts of the Everglades restoration on the South Florida coastal ecosystem. The regional model will be closely coordinated with and highly complementary to both local Florida Bay/Florida Keys models and parallel observational activities.

Geographic Area:

Coastal seas adjacent to Florida Bay/Florida Keys.

Project Status:

To view the latest progress report, [click here](#).